Appendix B: Constructing Consumption and Expenditure Measures in the Consumer Expenditure Survey (CE) and the Agricultural Resource Management Survey (ARMS)

Appendix table B-1 illustrates the mapping of the CE expenditure categories into the common major categories used in the parallel consumption measures we calculate for ARMS and CE data. Column 2 identifies the categories of ARMS variables. To make transparent the mapping between ARMS and CE categories, we identify in column 3 the subcategories of items in CE reflected in each ARMS variable (as well as in variables calculated for CE data designed to be comparable).

(A table with estimates of the detailed subcategories of the expenditure and consumption measures for the two populations is available from the authors.)

We make parallel adjustments to expenditure data in CE and ARMS in order to calculate consumption measures that are as consistent as possible using the two surveys. Three components merit particular attention. Here, we explain the procedures for calculating service flows for housing and vehicles, and the composition of the "all else" category in the CE and ARMS measures.

Expenditures on "All else"

ARMS: The survey question used to measure "all else" is at the end of the list and asks for "all other family living expenses, such as clothing, and personal care products and services; house furnishings and equipment, education and child (or adult) care, entertainment (hobbies, recreation, and vacations)."

CE: The CE categories that are combined into the "all else" category for the farm and all U.S. household consumption measures are shelter (other lodging); household furnishings and equipment; apparel; entertainment; personal care products and services; reading, education; tobacco products, smoking supplies; alcohol; and miscellaneous.

Housing ("shelter") service flows

ARMS: To calculate housing shelter services for farm households from ARMS data, we apply the BEA rent-to-value ratios used in the USDA Farm Income Sector Accounts to account for the asset value of the household residence. The BEA rent-to-value ratios are conditional on the value of residence and cover imputed rent only; no expenses are deducted or added, such as utilities.[4] We calculate values for households living in a residence owned by the farm as well as for households that own their residence.

For 2006, ARMS did not collect expenditure outlays for mortgages and related expenses for owned houses or for purchase of vehicles, so we imputed values based on 2005 data. For housing, the imputations for mortgage and related expenditures were needed for the 20 percent of the sample that reported

[4] Source: Denise McBride, BEA, personal communication, June 18, 2008.

Appendix table B1

Mapping of expenditure and consumption components between CE and ARMS, 2006

			ARMS	ARMS	CE	CE
Category	**ARMS variable subcategory**	**CE subcategory**	**Expenditures**	**Consumption**	**Expenditures**	**Consumption**
Food	Food	Food	yes	yes	yes	yes
Housing	Shelter	Shelter				
	- Owned dwellings:					
	-- Principal payments on mortgage	Principal payments on mortgage*	yes (imputed)	no	yes*	no
	-- Other mortgage-related expenses:		yes (imputed)	no	yes	no
		Mortgage interest and charges;				
		Property taxes;				
		Maintenance, repairs, insurance, other				
	--Shelter annual service flow	Rental value of owned home (Self-report)	no	yes (BEA rental factors)	no	yes (self-report of rental value)
	-Rented dwellings		yes	yes	yes	yes
	Operating expenses		yes	yes	yes	yes
		Utilities, fuels, and public services (electricity, gas, water, telephone, etc)				
		Household operations (personal services, other household expenses)				
		Housekeeping supplies				
Transport	Vehicle services					
	Owned vehicles					
	Net outlays	Vehicle purchases (net outlay)	yes (imputed)	no	yes	no
	Vehicle annual service flow	n/a	no	yes (imputed - user cost of capital)	no	yes (imputed - user cost of capital)
	Leased vehicles and public transportation		yes	yes	yes	yes
		Other vehicle expenses: vehicle rental, leasing, licensing, other				
		Public transportation				
	Operating expenses		yes	yes	yes	yes
		Gas and motor oil				
		Other vehicle expenses: finance charges, maintenance and repairs, vehicle insurance)				
Health care						
	Health and dental insurance (paid by household)	Health insurance (paid by hh)	yes	yes	yes	yes
	Out-of-pocket household medical expenditures		yes	yes	yes	yes
		Medical services				
		Drugs				
		Medical supplies				
All other			yes	yes	yes	yes
		Shelter: Other lodging				
		Housing: Furnishing/equipment(appliances, etc)				
		Apparel				
		Entertainment				
		Personal care products and services				
		Reading				
		Education				
		Tobacco products, smoking supplies				
		Miscellaneous				
		Alcohol				
Personal insurance and retirement plans			yes	no	yes	no
		Life and other personal insurance				
		Pensions and Social Security				
Contributions (outside of household)		Cash contributions	yes	no	yes	no
Home consumption		n/a	no	yes	no	na

*CE does not consider mortgage principal as an expenditure (but rather as a change in household assets).

owning their residence through the household rather than through the farm business.

CE: To calculate housing shelter services for all U.S. households from CE data, we follow standard practice and use the self-reported rental equivalence value obtained from the consumer unit. Consumer units who own their own home are asked, "If someone were to rent your home today, how much do you think it would rent for monthly, unfurnished and without utilities?" For respondents who do not know the rental equivalence of their home, CE reported an imputed value.

Transportation service flows

CE: To calculate transportation services for all U.S. households, we calculate the user cost of capital based on Slesnick (1994, 2001) and others. In their formulation, the service flow in a given year from an asset = (r+d), where r = interest rate and d = depreciation rate. Starting with the original purchase price reported in CE, their formula is: St = (r+d)(1-d)s * P0, where P0 is the original purchase price and s = age of the vehicle. We assume, as Slesnick does, that r =.05 and d =.10.

ARMS: To calculate transportation services for farm households, we employ the same approach as with CE data. Since ARMS data include the current asset value, the calculation simplifies to *.15*household-owned current asset value*.